

PROPOSAL TO REPEAL THE RULING GIVEN IN OPINION 47 AND TO
USE THE PLENARY POWERS TO STABILIZE THE GENERIC NAMES
CARCHARHINUS BLAINVILLE, 1816, *CARCHARODON* A. SMITH,
1838, AND *ODONTASPIS* J. L. R. AGASSIZ, 1838, IN THEIR ACCUS-
TOMED SENSES (CLASS PISCES). Z.N.(S.) 920

By E. I. White, Denys W. Tucker and N. B. Marshall

The "Summary" of Opinion 47 (*Smithson. Inst. Publ.* 2060, February 1912: 108-109) states simply that "*Carcharias* Rafinesque, 1810, is monotypic, type *Carcharias taurus* Rafinesque". Apart from the date of the generic name, the statement is true. The "Statement of Case", however, contains an error of fact, while the implication of the ruling, that *Carcharias* is to be used as the valid name for the largest genus, taxonomically speaking, of fossil sharks, known for over 120 years as *Odontaspis* J. L. R. Agassiz, 1838, has been ignored. The names of two other genera are also involved, namely, those known respectively as *Carcharhinus* Blainville, 1816 (the largest genus, taxonomically speaking, of living sharks) and as *Carcharodon* A. Smith, 1838 (the man-eating shark).

2. In 1809, Rafinesque (*Caratt. alc. n. gen. e n. spec. d'animali e piante della Sicilia*: 10) established a new genus *Carcharias*, with *Carcharias taurus* Rafinesque, 1809 (*ibid.*) as the type-species, by monotypy. (The date of this work is usually given as 1810, but Fitzpatrick, 1911, *Rafinesque, Life with Bibliography*, has shown that pp. 1-69 were published in 1809, and pp. 71-105 in 1810.) In 1810 (*Indice Ittiol. Sicilia*: 44), Rafinesque referred three species to the genus, namely, *C. taurus*, *C. lamia* and *C. glaucus*. The specific name *lamia* was proposed to replace *carcharias* Linnaeus, 1758 (*Squalus*) (*Syst. Nat.* (ed. 10) 1: 235), apparently to avoid tautonymy, but it is clear that it is invalid as a junior objective synonym, and that Rafinesque should have used the binomen *Carcharias carcharias* (Linnaeus, 1758). In the case of the third species, Rafinesque merely transferred *Squalus glaucus* Linnaeus, 1758 to *Carcharias*.

3. *Squalus carcharias* Linnaeus, 1758, is a composite species, for it combines the characters of the two species now known as *Carcharodon carcharias* (Linnaeus, 1758) and as *Carcharhinus longimanus* (Poey, 1861) respectively. Current usage of these two names is now well established, but Rafinesque used *Carcharias lamia* (a junior objective synonym of Linnaeus's name) in the latter sense in his later works, as also did Cuvier (1817, *Règne anim.* 2: 125), Risso (1826, *Hist. nat. Eur. mérid.* 3: 119), and Müller & Henle ([1839], *Syst. Plagiost.*: 37). *Squalus* (*Carcharias*) *longimanus* Poey, 1861 (*Mem. Hist. nat. Cuba* 2: 338) was made the type-species, by original designation, of a new genus *Pterolamia* S. Springer, 1950 (*Amer. Mus. Nov.* 1451: 7), but this name was found to be a junior homonym of *Pterolamia* Breuning, 1942, and was accordingly replaced by *Pterolamiops* S. Springer, 1951 (*Copeia* 1951 (3): 244). There is no confusion over the interpretation of this name, but with regard to *Squalus carcharias* Linnaeus, 1758, we propose that the description given by

Bigelow & Schroeder (1948, *Fishes of the Western North Atlantic*: 134–145, figs. 20–21) be selected as the standard of reference for the interpretation of the specific name. It is impracticable to designate a mature specimen in a collection as neotype of so large an animal. No type-specimen exists in the Linnean Collection.

4. *Carcharias taurus* Rafinesque, 1809, is also the type-species, by original designation, of *Triglochis* Müller & Henle, 1837, which is therefore a junior objective synonym of *Carcharias* Rafinesque, 1809; and both names are subjectively available for the genus long universally known as *Odontaspis* J. L. R. Agassiz, 1838 (type-species, by monotypy, *Carcharias ferox* Risso, 1826 (*Hist. nat. Eur. mérid.* 3 : 122) (not *C. taurus* as alleged in the “Statement of Case” in Opinion 47). It is therefore desirable that both these senior synonyms be suppressed for the purposes of the Law of Priority, but not of the Law of Homonymy, so as to validate *Odontaspis*.

5. The generic name *Odontaspis* was first published by Agassiz in the “Feuilleton” added as a supplement to his *Recherches sur les Poissons fossiles*, 1833–1834. The name appeared on p. 55 of the Feuilleton, which was published in 1835, according to W. H. Brown, 1890 (in Woodward & Sherborn, *Cat. Brit. foss. Vert.* : xxv–xxix), as “*Odontaspis rhapsiodon* Ag.—Lewes—Mastricht—” without any other data accompanying either the new generic or the new specific name, each of which is therefore a *nomen nudum*. The generic name was first made available in 1838, in *Rech. Poiss. foss.* 3 : 87, where it is mentioned as “Le genre *Odontaspis* Ag. (*Triglochis* Müller & Henle, *Carcharias ferox* Risso)” and accompanied by a brief description of the genus. It is in this passage that the type-species is indicated by monotypy, for later pages in the same volume (: 293 *et seq.*), where further species were referred to the genus, were not published until 1843 (Brown, *loc. cit.*).

6. Meanwhile, the generic name *Triglochis* had been established in a paper published twice in 1837 by Müller & Henle, namely, in *Arch. Naturg.* Jahrg. 3, 1 : 396, and in *Ber. Verh. preuss. Akad. Wiss.* 1837 : 113. The latter reference relates to the Monatsbericht reporting the meetings of July 1837, but there is no evidence that either publication appeared before the other, and for the purposes of nomenclature, both are to be dated 31 December 1837. The following words are identical in both versions: “. . . führen die Verf. 2 neue Gattungen an, *Triglochis* und *Triaenodon*. Der Typus der ersten ist *Carcharias Taurus* Raf. . . .”. In the same papers, *Odontaspis* is mentioned (: 397, : 114) as follows: “Die Gattung *Lamna* Cuv. mit den Untergattungen *Lamna* (2 Spp.), *Odontaspis* Agass. (1 Sp.), *Oxyrhina* Agass. (1 Sp.) besitzt lange, spitze Zähne mit oder ohne Nebenzacken . . .”, but no independent description, definition, or indication is given for *Odontaspis*, which therefore remains a *nomen nudum*.

7. Since the respective nominal type-species of *Carcharias* Rafinesque, 1809, and *Odontaspis* J. L. R. Agassiz, 1838, are congeneric, it is the latter name which is threatened by the former. It has always been held, however, that Rafinesque’s taxonomic intention in proposing his new name was to provide a new genus for *Squalus carcharias* Linnaeus, and since that species has in the past been interpreted in two different ways, *Carcharias* has been

held to be a senior synonym both of *Carcharodon* A. Smith, 1838, and of *Carcharhinus* Blainville, 1816. This dilemma is confusedly set forth in the "Statement of Case" in Opinion 47, and it is now necessary to consider the status and circumstances of these two generic names.

8. *Carcharodon* was first published, with a brief description, in Müller & Henle, 1838, *Mag. nat. Hist.* (n.s.) 2 : 37, and was attributed to Andrew Smith. The genus was stated to contain one species, but none was mentioned by name. The first author to refer any species to the genus was Bonaparte, 1839 (*Faun. Ital.* (24) punt. 126, 126*, pl. 135), who cited *Carcharodon lamia*, with *Squalus carcharias* Risso (1810, *Ichth. Nice* : 25) and *Carcharias lamia* Risso (1826, *loc. supra cit.*) in the synonymy. The nominal species in question must be taken to be *Carcharias lamia* Rafinesque, 1810, which is, as has been seen, a junior objective synonym of *Squalus carcharias* Linnaeus, 1758. This is therefore the valid name of the type-species of *Carcharodon*. In [1839], Müller & Henle (*Syst. Besch. Plagiost.* (2) : 70) referred the single species *Carcharodon Rondeleti* to the genus, citing *Carcharodon lamia* Bonaparte, 1839, among the synonyms. It follows that their work must be assumed to have been published later than Bonaparte's, and that *Carcharodon rondeleti* is another junior objective synonym of *Carcharodon carcharias* (Linnaeus, 1758). This fact is well known.

9. *Carcharias*, as used by several authors subsequent to Rafinesque, 1809, seems to have been proposed deliberately as a new (and homonymous) generic name rather than as a citation of Rafinesque's name. Cuvier (1817, *Règne anim.* 2 : 125) included three species in the genus, one of which was cited as "*Squalus carcharias*" (to be read as of Linnaeus, 1758), and is therefore the type-species by absolute tautonymy. *Carcharias* Risso, 1826 (*Hist. nat. Eur. mérid.* 3 : 119) included five species, one of which was *C. lamia* : *Squalus carcharias* is therefore also the type-species of this genus. *Carcharias* Müller & Henle, [1839] (*Syst. Besch. Plagiost.* : 37) was divided into five subgenera, none of which was given the generic name as its own. The subgenus *Prionodon*, however, contains "*Carcharias (Prionodon) lamia* Risso" of which "*Squalus carcharias* Risso" is cited as a synonym. Under the Rules, therefore, *Squalus carcharias* Linnaeus, 1758, is the type-species of *Carcharias* Müller & Henle, [1839], and *Prionodon* of those authors becomes the nominate subgenus. Thus there is no difference in the nomenclatorial status of any of these uses of the generic name *Carcharias* subsequent to Rafinesque, 1809. They all apply to a genus other than that to which the original monotypical type-species of *Carcharias* Rafinesque belongs, and they all rank as senior objective synonyms of *Carcharodon* A. Smith, 1838. For this reason, *Carcharias* Rafinesque, 1809 (which itself threatens *Odontaspis* J. L. R. Agassiz, 1838), must be suppressed only for the purposes of the Law of Priority, while retaining its rights under the Law of Homonymy, so as to prevent any of the junior homonyms cited above from displacing *Carcharodon* A. Smith, 1838.

10. *Prionodon* Müller & Henle, [1839], is automatically invalidated as a junior homonym of *Prionodon* Horsfield, 1822 (Mammalia); and it has in fact been expressly replaced by *Prionace* Cantor, 1850 (*J. Asiat. Soc. Bengal* 18(2) : 1381. The type-species of *Prionace* must, therefore, be that of

Prionodon, namely, *Squalus carcharias* Linnaeus, 1758, so that the name falls as a junior objective synonym of *Carcharodon*. The name is, however, in well-established use for a different genus, that which contains the Blue Shark, *Squalus glaucus* Linnaeus, 1758; and this species, which is one of those originally included in *Prionodon* Müller & Henle, was designated as type-species of *Prionace* by Jordan in 1919 (*Genera of Fishes* (Stanford Univ. Publ., Univ. Series) (2): 242). Stability of nomenclature would be seriously damaged by the strict application of the Rules in this case, and we therefore ask that the plenary powers be used to designate *S. glaucus* Linnaeus, 1758, as the type-species of *Prionace*.

11. *Carcharhinus* was first published by Blainville in August 1816 (*Bull. sci. Soc. philomath. Paris* 1816: 121), and later in the same year in *J. Phys.* 83: 264. Fourteen species were cited as belonging to the genus, but nine of these (including *C. commersonii*, the first species) are based only on *nomina nuda*. The other five nominal species are: *Carcharias lamia* Rafinesque, 1810, *Squalus glaucus* Linnaeus, 1758, *Squalus cornubicus* Gmelin, 1789, *Squalus monensis* Shaw, 1804, and *Squalus vulpes* Gmelin, 1789. No type-species was designated or indicated.

12. Bosc (1816, *Nouv. Dict. Hist. nat.* 5: 277) said of *Carcharhinus*: "Le Squal-Requin ou Lamie. *Squalus carcharias* lui sert de type". Since this must be taken to mean *Squalus carcharias* Linnaeus, 1758, which is a senior objective synonym of *Carcharias lamia* Rafinesque, 1810 (which was one of the nominal species originally included in *Carcharhinus*), Bosc's designation of the type-species is valid under Declarations 21 and 25. *Carcharhinus* Blainville, 1816, thus becomes itself a senior objective synonym of *Carcharodon* A. Smith, 1838. Bosc's designation has, however, never been adopted. Jordan & Gilbert (1883, *Bull. U.S. nat. Mus.* 16: 22) designated *C. commersonii* as type-species of *Carcharhinus*, but this specific name was not available at the time when the genus was established. It was not in fact validated until 1825 (Blainville in Vieillot, *Faune de France*: 90), where it was said to be based on Lacépède, 1798, *Hist. nat. Poissons* 1: 169, pl. 5, fig. 1. The reference is clearly erroneous, for the figure illustrates a skate and not a shark. Assuming, on grounds of probability, that pl. 8, fig. 1 was meant, there is still uncertainty as to the meaning of the specific name, for neither the figure (although it certainly represents a species of *Carcharhinus* as generally understood) nor the measurements given with it enable the species to be identified. Thus *Carcharhinus commersonii* Blainville, 1825, even if eligible, would not be a suitable type-species for the genus.

13. If *Carcharhinus* is to be stabilized in accordance with current usage, it is clear that Bosc's valid type-designation must be set aside. In looking for a suitable substitute type-species, it is necessary first to ignore the other four nominal species originally included in the genus, since these are distributed among other genera whose names are in general use. Two of these genera are junior to *Carcharhinus* and one is senior. In any case, the designation of any of the four species concerned as the type-species of *Carcharhinus* would have disastrous effects on the stability of the generic names involved. In searching elsewhere for a suitable species, we consulted Dr. W. C. Schroeder (Woods

Hole Oceanographic Institution, Mass., U.S.A.), who is co-author with Dr. H. B. Bigelow of the standard work in English bearing on the present issue (Bigelow & Schroeder, 1948, *Fishes of the western North Atlantic*, Sears Found. Publ.1). Dr. Schroeder replied: "Dr. Bigelow and I agree with you that stabilization of the genus name *Carcharhinus* is most desirable, not only because its nomenclatural history is confused but because it includes a larger number of closely related species than does any other genus of modern sharks and many of the most familiar of the large sharks of temperate and warm seas. In our opinion, Jordan & Gilbert's designation of *C. commersonii* Blainville, 1816, was valid on nomenclatural grounds. But the type-specimen of *commersonii* is not in existence. And while Lacépède's illustration of it, with the accompanying measurements, seems certainly to have been based on a member of the genus as subsequently understood, they are not sufficiently detailed to place it in any particular species in the light of later knowledge. Since no acceptable revision of Blainville's species (many of them only nominal) has appeared, and since Garman does not help us at all, we believe the most promising solution to the dilemma is to follow the suggestion in paragraph 3 of your letter, i.e. to propose as the type of *Carcharhinus* some species which is not only clearly congeneric with the illustration on which Blainville based the genus, but the type-specimen of which is available for study in some well-established museum. In our opinion, the most suitable species for this purpose (perhaps the only suitable species) is *Carcharias (Prionodon) milberti* Müller & Henle, [1839] (*Syst. Besch. Plagiost.* : 38-39), which was based on a specimen in the Paris Museum, from New York, collected by Milbert, combined with one in Berlin and a third in Leiden. Since the Berlin specimen may not be in existence still and since the number of teeth in the Leyden specimen was different from that in the Berlin and Paris specimens, would it not be in order to designate the Paris specimen as the type of the species? There are specimens of *milberti* in the Museum of Comparative Zoology, in the U.S. National Museum and doubtless in the Academy of Natural Sciences in Philadelphia."

14. The above suggestion provides by far the most certain and effective solution to the problem of the type-species of *Carcharhinus*, and we are glad to adopt it, with grateful acknowledgments to Dr. Schroeder and Dr. Bigelow. We next proceeded to enquire as to the suitability of the Paris specimen of *Carcharhinus milberti* referred to. Dr. J. Guibé (Muséum National d'Histoire Naturelle, Paris) kindly provided the particulars of this specimen, which we here select as lectotype of the species, given in the Appendix.

15. Three family-group names are involved in the present case. Müller & Henle (*op. cit.* [1839] : xvii) proposed a family CARCHARIAE, based on *Carcharias*, but this name is to be automatically rejected upon the suppression under the plenary powers of the name of its type-genus. Its place is taken by ODONTASPIDES (an incorrect original spelling of ODONTASPIDIDAE) Müller & Henle, [1839], *ibid.* The name CARCHARHINIDAE Garman, 1913, *The Plagiostoma* : 106, is based on *Carcharhinus* Blainville, 1816. The two latter names should be placed on the Official List.

16. We therefore propose that the International Commission on Zoological Nomenclature should :

(1) repeal the ruling given in Opinion 47 ;

(2) use its plenary powers :

- (i) to suppress the generic name *Carcharias* Rafinesque, 1809, for the purposes of the Law of Priority but not for those of the Law of Homonymy ;
- (ii) to suppress the generic name *Triglochis* Müller & Henle, 1837, for the purposes of the Law of Priority but not for those of the Law of Homonymy ;
- (iii) to set aside all designations of type-species for the nominal genus *Carcharhinus* Blainville, 1816, made prior to the ruling now asked for, and to designate *Squalus* (*Carcharias*) *milberti* Müller & Henle, [1839], as the type-species of that genus ;
- (iv) to set aside all designations of type-species for the nominal genus *Prionace* Cantor, 1850, made prior to the ruling now asked for, and to designate *Squalus glaucus* Linnaeus, 1758, as the type-species of that genus ;

(3) to place the following generic names on the Official List of Generic Names in Zoology :

- (a) *Carcharhinus* Blainville, 1816 (gender : masculine), type-species, by designation under the plenary powers in (2)(iii) above, *Squalus* (*Carcharias*) *milberti* Müller & Henle, [1839] ;
- (b) *Carcharodon* A. Smith in Müller & Henle, 1838 (gender : masculine), type-species, by subsequent monotypy, through *Carcharias lamia* Rafinesque, 1810, *Squalus carcharias* Linnaeus, 1758 ;
- (c) *Odontaspis* J. L. R. Agassiz, 1838, (gender : feminine), type-species, by monotypy, *Carcharias ferox* Risso, 1826 ;
- (d) *Prionace* Cantor, 1850 (gender : feminine), type-species, by designation under the plenary powers in (2)(iv) above, *Squalus glaucus* Linnaeus, 1758 ;
- (e) *Pterolamiops* S. Springer, 1951 (gender : masculine), type-species, by original designation, through *Pterolamia* S. Springer, 1950, *squalus* (*Carcharias*) *longimanus* Poey, 1861 ;

(4) place the following specific names on the Official List of Specific Names in Zoology :

- (a) *milberti* Müller & Henle, [1839], as published in the binomen *Carcharias* (*Prionodon*) *milberti* and as defined by the lectotype selected in the present application (type-species of *Carcharhinus* Blainville, 1816) ;
- (b) *carcharias* Linnaeus, 1758, as published in the binomen *Squalus carcharias*, and as interpreted by Bigelow and Schroeder, 1948, *Fishes of the western North Atlantic* : 134-135, figs. 20-21 (type-species of *Carcharodon* A. Smith in Müller & Henle, 1838) ;
- (c) *ferox* Risso, 1826, as published in the binomen *Carcharias ferox* (type-species of *Odontaspis* J. L. R. Agassiz, 1838) ;
- (d) *glaucus* Linnaeus, 1758, as published in the binomen *Squalus glaucus* (type-species of *Prionace* Cantor, 1850) ;
- (e) *longimanus* Poey, 1861, as published in the combination *Squalus*

- (*Carcharias*) *longimanus* Poey, 1861 (type-species of *Pterolamiops* S. Springer, 1951);
- (5) place the following generic names on the Official Index of Rejected and Invalid Generic Names in Zoology :
- (a) *Carcharias* Rafinesque, 1809 (suppressed under the plenary powers in (2)(i) above);
- (b) *Triglochis* Müller & Henle, 1837 (suppressed under the plenary powers in (2)(ii) above);
- (b) the following junior homonyms of *Carcharias* Rafinesque, 1809 :
- (i) *Carcharias* Cuvier, 1817;
- (ii) *Carcharias* Risso, 1826;
- (iii) *Carcharias* Müller & Henle, [1839];
- (c) *Prionodon* Müller & Henle, [1839] (a junior homonym of *Prionodon* Horsfield, 1822);
- (d) *Pterolamia* S. Springer, 1950 (a junior homonym of *Pterolamia* Breuning, 1942);
- (6) place the following specific name on the Official Index of Rejected and Invalid Species Names in Zoology :
- lamia* Rafinesque, 1810, as published in the binomen *Carcharias lamia* (a junior objective synonym of *carcharias* Linnaeus, 1758, as published in the binomen *Squalus carcharias*);
- (7) to place the following family-group names on the Official List of Family-group Names in Zoology :
- (a) ODONTASPIDIDAE (correction of ODONTASPIDES) Müller & Henle, [1839] (type-genus *Odontaspis* J. L. R. Agassiz, 1838);
- (b) CARCHARHINIDAE Garman, 1913 (type-genus *Carcharhinus* Blainville, 1816);
- (8) place the following family-group names on the Official Index of Rejected and Invalid Family-group Names in Zoology :
- (a) CARCHARIAE Müller & Henle, [1839] (type-genus *Carcharias* Rafinesque, 1809 (invalid through the suppression under the plenary powers in (2) (i) above of the name of the type-genus);
- (b) ODONTASPIDES Müller & Henle, [1839] (type-genus *Odontaspis* J. L. R. Agassiz, 1838) (an incorrect original spelling of ODONTASPIDIDAE).

APPENDIX

The following are the particulars of the lectotype chosen in the present application (Paragraph 14) for *Carcharias* (*Prionodon*) *milberti* Müller & Henle, [1839] supplied by Dr. J. Guibé :

“Un specimen ♂, numéro 1142 Coll. Mus. Paris. Provenant de la côte de l'Etat de New York ; récolté par Milbert ; conservé en alcool ; en bon état.

						millimètres
Longueur totale	..	..	..	..	..	605
Hauteur du tronc	..	..	..	..	..	75

Epaisseur du tronc	65
Long, de la tête (de l'extrémité du museau à la première fente branchiale)	125
Largeur de la tête	68
Diamètre oculaire	16.5
Espace préorbitaire	45.5
Espace interorbitaire	65.5
Longueur de la narine	11.5
Espace internasal (pris à l'angle interne des narines) ..	36
Longueur du rostre (à partir de la mâchoire supérieure)	47
Largeur de la bouche	49
Longueur de la caudale (prise à l'aplomb du lobe inférieur)	17.5
Idem (prise à l'aplomb du lobe supérieur)	16.5
Longueur de la pectorale	101
Longueur museau-première dorsale	180
Longueur museau-deuxième dorsale	371
Longueur museau-anale	440
Longueur museau-pectorale	150
Longueur museau-pelvienne	294
Nombre de dents à la mâchoire supérieure : 29	
à la mâchoire inférieure : 29	

Il est difficile de dénombrer avec exactitude le nombre des dents, toutefois le nombre ci-dessus ne comporte pas une erreur de plus de une ou deux unités."

COMMENT ON THE PROPOSED VALIDATION OF THE GENERIC NAME *PERLA* GEOFFROY, 1762

(see this volume, pages 87-89)

By Otto Winkler (*Prague, Czechoslovakia*)

The proposal made by Mr. Kimmins is doubtless very right and useful. The fundamental aim of the International Commission on Zoological Nomenclature is to do away with nomenclatorial difficulties; the rigorous application of the Rules would be harmful in this case, because it would produce a lot of new confusion and complication in the future. Therefore I agree with all items of Mr. Kimmins's proposal.